

Goplana dioscoreae

Goplana dioscoreae (winged yam rust) is a rust fungus reported from Asia and Pacific Islands and, as the synonym *Uredo dioscoreae-alatae*, is listed as of quarantine significance for the United States.

Winged yam (*Dioscorea alata* L.) is originally from continental tropical Asia and produces large, edible tubers, and is an important source of the steroid diogenin used in birth control pills. *Dioscorea alata* was introduced into the Americas and is considered an invasive vine in Florida where it can produce stems up to 30 ft. long.

***Goplana dioscoreae* Cummins**

Spermogonia, aecia unknown.

Uredinia amphigenous, on petioles, and caulicolous, deep-seated in host tissues, long covered by elevated, cupulate, thick, dark brown host tissue, erumpent by irregular central apertures, small, less than 1 mm diam, scattered or grouped in areas up to ½ cm diam, on dark leaf spots. **Urediniospores** pedicellate, sub-globose to ellipsoid, almost hyaline to pale yellow to pale chestnut-brown, 17-28 × 14-22 µm, wall echinulate, 2-3 µm thick; pores 6-9, scattered, obscure.

Telia hypophyllous, minute, densely gregarious, subepidermal, erumpent, waxy and gelatinous when wet. **Teliospores** in groups, on large, laterally free cells, cylindric, (46-) 50-77 × 7-11 µm, walls thin, colorless; metabasidia form by continuous apical elongation of probasidial cells.

Hosts: *Dioscorea alata* L., *Dioscorea bulbifera* L., *Dioscorea esculenta* (Lour.) Burkill, *Dioscorea transversa* R. Br., and *Dioscorea* sp. (Dioscoreaceae).

Geographic distribution: Australia, Brunei, Indonesia, Java, Malaysia, New Caledonia, Pacific Islands, Papua New Guinea, Philippines, Singapore, Sri Lanka.

Several rust fungi are reported on species of *Dioscorea*. At present, only seven rust taxa are known to occur in the western hemisphere: *Aecidium dioscoreae* J.C. Linq., *Cerotelium dioscoreae* Berndt, *Goplana ecuatoriana* Syd., *Puccinia valida* Arthur, *Sphenospora pallida* (G. Winter) Dietel, *U. dioscoreicola* Kern, Cif. & Thurst., and *Uredo pallatangae* Jorst. No rust on species of *Dioscorea* was reported from Europe, but a number of rust fungi were reported from Africa, Asia and Oceania.

Two species of *Aecidium* are reported on species of *Dioscorea*: *Aecidium dioscoreae* J.C. Lindq. and *Aecidium leonense* Cummins have an *Aecidium*-type anamorph with peridial cells, differing from the anamorph of *G. dioscoreae*, which has *Uredo*-type without peridial cells.

Cerotelium dioscoreae Berndt has urediniospores with two equatorial germ pores while urediniospores of *G. dioscoreae* have 6-9 obscure scattered germ pores.

Two other species of *Goplana* are reported on species of *Dioscorea*: *G. australis* Ono and J.F. Hennen produces urediniospores with (4-) 6-8 (9) equatorial germ pores, while urediniospores of *G. dioscoreae* have obscure, scattered (6-9) germ pores. *G. ecuatoriana* Syd. has paraphysate uredinia while uredinia of *G. dioscoreae* are paraphysate.

One species of *Phakopsora* is reported on species of *Dioscorea*: *P. dioscoreae* Thaug with peripheral paraphysate uredinia, while uredinia of *G. dioscoreae* have no paraphyses.

Two species of *Puccinia* are reported on species of *Dioscorea*: *P. dioscoreae* Kom. and *P. valida* Arthur produce teliospores that are one-septate and urediniospores with two germ pores, while teliospores of *G. dioscoreae* are non-septate and urediniospores have 6-9 obscure scattered germ pores.

One species of *Sphenospora*, *S. pallida* (G. Winter) Dietel, is reported on several species of *Dioscorea* from Belize, Brazil, Costa Rica, Ecuador, Guatemala, Panama, Peru, and Venezuela. The reports are mostly of the uredinial stage with urediniospores (20-) 22-26 (-29) × 19-22 µm while urediniospores of *G. dioscoreae* are smaller, 17-28 × 14-22 µm.

Seven species of *Uredo* have been reported on species of *Dioscorea*: *Uredo dioscoreae-aculaetae* Racib. has urediniospores that are bilaterally ovate, spiny on convex surface and smooth on the lower surface (*Hemileia*-like) while urediniospores of *G. dioscoreae* are evenly echinulate. *U. dioscoreae-filiformis* Racib. has obovoid, ellipsoid or pyriform urediniospores measuring 28-38 × 20-26 µm, *U. dioscoreae-sativae* Syd. & P. Syd. has obovoid, ellipsoid, pyriform to oblong, often angular urediniospores measuring (19-) 21-35 (-37) × 14-22 (-23) µm, and *U. pallatangae* Jorst. has urediniospores oblong, ellipsoid to obovoid 32-45 × 14-28 µm, while urediniospores of *G. dioscoreae* are sub-globose to ellipsoid and measuring 17-28 × 14-22 µm. Urediniospores of *U. dioscoreicola* Kern, Cif. & Thurst. have 3-4 equatorial germ pores and *Uredo xenoporula* P. Syd. & Syd. has urediniospores with a

single germ pore at the base of the spore next to the pedicel while urediniospores of *G. dioscoreae* have obscure scattered (6-9) germ pores. *U. spinulosa* Ono has abundant uredinial paraphyses, while uredinia of *G. dioscoreae* are aparaphysate.

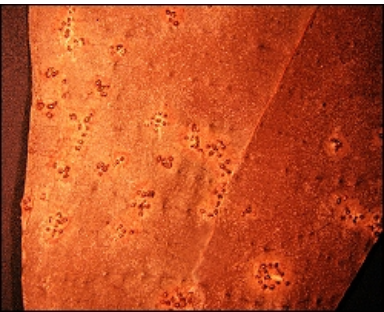
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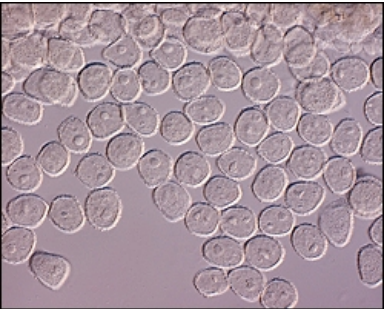
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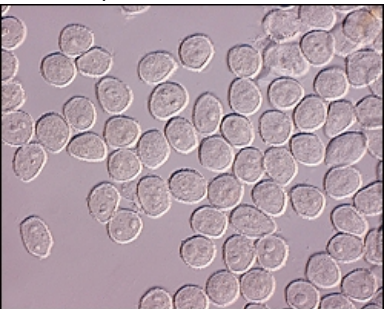
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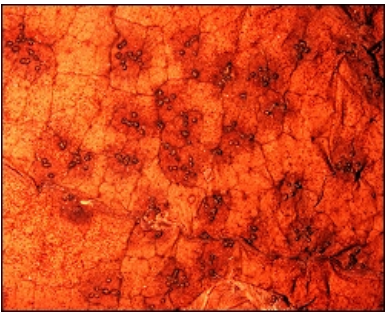
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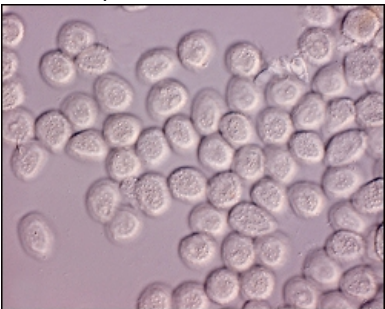
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